

We Claim:

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1. A method of forming a digital directional coupler, which comprises at least two optical waveguides, said method comprising scanning a laser beam across a
5 photosensitive material to induce refractive index changes in the material to form each of the waveguides, wherein the scanning speed is varied to create a refractive index taper of a selected functional form in each of the waveguides.
2. A method as claimed in claim 1 wherein the laser
10 beam has a doughnut type irradiance distribution.
3. A method as claimed in any previous claim wherein the laser is a TEM₀₁* mode laser.
4. A method as claimed in any previous claim wherein
15 the mode of the laser is chosen so as to provide an increased coupling strength between adjacent ones of the waveguides.
5. A method as claimed in any previous claim wherein the photosensitive material is in a planar form.
6. A method as claimed in any previous claim wherein
20 the scanning speed is varied during the forming of each waveguide in a manner such that adjacent ones of the waveguides are refractive index tapered in opposite directions.
7. A digital directional coupler device when
25 produced utilizing the method of any one of the previous claims.